steel piston. The photographs show that the gases are fired at a point, and are not fired instantaneously throughout.—*Dr. F. D. Chattaway, F.R.S.:* Ammonium perhalides. Although derivatives of ammonia in which hydrogen attached to trivalent nitrogen is replaced by halogen, such as nitrogen chloride, NCl_3, and nitrogen iodide, $NI_3{=}NH_3$, are violently explosive, the ammonium perhalides, which contain complexes of three halogen atoms attached to pentavalent nitrogen, are perfectly stable. They are highly coloured substances, which crystallise well from water, in which they are very soluble.—*Mr. Francis Fox:* Pitchblende, or radium ore, from Trenwith Mine, Cornwall (St. Ives Consolidated Mines, Cornwall). In 1843 Prof. Henwood, F.R.S., drew up a report on the Trenwith Mine with reference to its unproductiveness as a copper mine. He reported that the mine contained large quantities of pitchblende, at that time considered to be valueless. Records exist describing the position of the pitchblende in the mine, and vigorous steps are now being taken for clearing the mine of water and working it for pitchblende. The richer specimens contain 33 per cent. of uranium oxide (U_3O_8), and from 150 to 200 milligrams of radium per ton of ore.

The Director, Royal Gardens, Kew: (1) Experiments with Cyclamen seedlings. Cyclamen seedlings normally have only one cotyledon; if this be entirely removed the second cotyledon will develop. If only the lamina be cut off a new lamina will bud out from the side of the leaf-stalk near the apex, and on the removal of this second lamina a third can be induced to grow out from its stalk just below the apex. If the lamina be mutilated, and not wholly removed, new growths will also be formed. (2) Flowers of Sebæa (Gentianaceæ) with two stigmas. The flowers of the genus Sebæa (Gentianaceæ) from South Africa have been found to have two stigmatic surfaces on the same style, one above and one below the position of the anthers. The lower stigma has been fertilised after removal of the normal one, and from the seeds thereby formed seedlings have been raised at Kew.—*Prof. J. W. H. Trail, F.R.S.:* Preparations to illustrate the retention of colours, especially of green, in botanical specimens exposed to light. The method employed is described in the *Kew Bulletin*, 1908, No. 2.—*Dr. G. H. Rodman:* A series of photomicrographic transparencies of pollen cells.—*Mr. C. E. C. Fischer:* A parasitic fungus on beech (*Armillaria mucida*, Schrad).—*Mr. W. Fawcett:* Drawings of Jamaica orchids.—*Mr. R. A. Robertson:* Photographs for identification purposes of the transverse surface of timbers.

Marine Biological Association of the United Kingdom: The bottom deposits of the southern part of the North Sea. The charts and sections illustrate the great predominance of fine sand in most parts of the area, and the marked contrast between the broad stretches of sand off the Continental shores and the irregular but coarse ground along the English coast. They also show that the finest materials increase towards the north.—*Mr. W. Bagshaw:* (1) Photomicrograph showing abnormal striation of the diatom, *Navicula lyra*; (2) Frustule of diatom, exhibited under the microscope with 1/12 oil-immersion lens.—*Dr H. Gadow, F.R.S., and Mrs. Gadow:* Rare specimens of natural history from Mexico.—*Mr. L. Doncaster:* Case of *Abraxas grossulariata* (currant moth) illustrating sex-inheritance.—*Dr. E. F. Bashford:* Recent advances in knowledge of cancer (see NATURE, December 31, 1908).—*Lieut.-Colonel W. B. Leishman:* The transmission of tick fever. This relapsing fever of man, widespread in Africa, is due to the *Spirochaeta duttoni*, which is inoculated by the bite of a tick, the *Ornithodorus moubata*. Infected ticks may transmit the virus through the eggs to the second and even to the third generations, which, in their turn, may infect man by their bites. The mechanism of this hereditary transmission is not certain, but it appears possible that spirochætes ingested by a tick undergo a change of form, and, in this altered form, penetrate the young ova and infect the next generation, developing anew into spirochæte form under certain conditions of temperature.—*Dr. A. F. Bilderbeck Gomess: Cheyletus eruditus* as an entozoon in man.—*Dr. A. D. Waller, F.R.S.:* Demonstration of the electrical variations of the human heart and of the dog's heart on Einthoven's string galvanometer.—*Mr. S. G. Shattock:* A microscopic section of the aorta of King Menephtah, traditionally regarded as the Pharaoh of the Exodus, showing senile calcification. The mummy was found in 1898 by M. Loret in the tomb of Amenhotep II., at Biban el Muluk, Thebes. It was unwrapped in 1907 by Dr. G. Elliot Smith (acting on the instructions of M. Maspero). The mummy was wrapped in a sheet of fine linen, on which the name was written in hieratic characters. The microscopic sections show the presence of calcareous particles in the middle coat of the artery, such as are met with in senile degeneration.

Mr. H. R. Knipe: Drawings of extinct animals, by Miss Alice B. Woodward.—*Dr. A. Smith Woodward, F.R.S.:* Ramus of mandible and teeth of a herbivorous dinosaur, Trachodon, from the Upper Cretaceous of Wyoming, U.S.A.—*Dr. H. Gadow, F.R.S., and Mrs. Gadow:* Ethnological specimens from Mexico. (1) Prehistoric implements from the States of Chihuahua and Michoacan; (2) throwing sticks, used by the Tarasco Indians of Lake Patzcuaro.—*Dr. C. G. Seligmann:* Photographs of the Veddas of Ceylon and of their ceremonial dances. The Veddas are now limited to the sparsely settled country between the central hill *massif* and the eastern coast. A few still subsist on game, yams, and honey, and live in rock shelters, but the majority build huts and practise a little rude cultivation. Their ceremonial dances are essentially religious, and are performed to obtain the assistance of the spirits of their dead, who are called the Nae Yaku, or of certain long dead Vedda heroes, of whom the most important is the great hunter, Kande Yaka, who is also Lord of the Dead.—*Prof. Karl Pearson, F.R.S., Mr. E. Nettleship, and Mr. C. H. Usher:* Illustrative plates to a forthcoming monograph on albinism (Drapers' Company research memoirs).—*University of London, Francis Galton Laboratory for National Eugenics:* Pedigree work in man.—*Sir Benjamin Stone, M.P.:* Photographic studies of Constantinople and neighbourhood.

NOTES.

THE annual visitation of the Royal Observatory, Greenwich, will be held on Saturday, June 5.

PROFS. YVES DELAGE and M. G. Retzius have been elected foreign members of the Linnean Society.

THE Bessemer medal of the Iron and Steel Institute was presented to M. A. Pourcel at the meeting of the institute last week.

THE Wolcott Gibbs memorial lecture of the Chemical Society will be delivered by Prof. F. W. Clarke at the meeting of the society on Thursday, June 3.

THE annual conversazione of the Royal Society of Arts this year will be held at the Natural History Museum, South Kensington, on Tuesday, June 29.

A *Times* correspondent at Winnipeg reports that an earthquake shock, lasting from thirty seconds to a minute, was felt there and for 500 miles to the west at 10.17 p.m. on May 16.

THE Royal Scottish Geographical Society has decided to award the Livingstone gold medal of the society for the current year to Lieut. Shackleton, for his work in the Antarctic.

DR. G. A. GIBSON, 3 Drumsheugh Gardens, Edinburgh, who has undertaken to edit the medical and scientific papers and articles of the late Sir William Tennant Gairdner, and to preface the collection with a biography, will be glad to know of any letters or other literary remains possessed by friends of the late professor.

THE central committee of the Austrian Alpine Club, we learn from *La Nature*, has, by the liberality of the authorities of Munich, just been put in possession of a large building with excellent accommodation, and well situated on the banks of the Isar. The club proposes to inaugurate an Alpine museum in its new building specially concerned with everything related to the study of the Alps from every point of view.

WE learn from the *British Medical Journal* that the Harben lectures of the Royal Institute of Public Health will be delivered this year by Prof. R. Pfeiffer, director of the Hygiene Institute, Breslau. The first lecture, on the importance of bacteriolysins in immunity, will be given on Monday, June 21; the second, on endotoxins and anti-endotoxins, on June 23; and the third, on the problem of virulence, on June 25.

THE ninety-second annual meeting of the Société helvétique des Sciences naturelles will be held at Lausanne on September 5–8, under the presidency of M. Henri Blanc. On September 6 and 8 the subjects and openers of discussions will be:—the Jura, E. de Margerie; aërodynamic foundations of aviation, S. Finsterwalder; comparative psychology: determinism and theory of memory, A. Forel; history of the animal life of Ceylon, F. Sarasin; some recent results of astronomical photography, R. Gautier; and natural history impressions of Greenland, M. Rikli. The secretaries of the congress are MM. H. Faes and P. L. Mercanton, Lausanne.

AT the last annual meeting of the Royal Institution of Cornwall, held at Truro, it was announced that fitting accommodation has now been secured for the valuable collections in its charge. The scheme of adding to the existing museum has been abandoned, and a new building standing in its own grounds, free from the danger of fire, and occupying a conspicuous and accessible position, has been secured. The work of adapting this to form one of the best scientific museums in the west of England is now in progress; of a total estimated cost of 5000*l*., sufficient has been collected to warrant the council in proceeding with the scheme, and there is every reason to believe that the appeal for the balance will meet with a gratifying response.

THE Nature Study Society has organised an exhibition of aquaria, vivaria, and other means of observing animals, with photographic and microscopic illustrations, to be held at the Royal Botanic Gardens, Regent's Park, on Friday and Saturday, June 4 and 5. Exhibits of the following character will be acceptable:—aquaria, fresh water and salt water; vivaria containing reptiles, Amphibia, snails, caterpillars, and other animals; flight cages containing butterflies, dragon-flies, and other insects; ants' nests, wormeries, means of keeping minute forms of life; microscopic exhibits illustrating minute forms of life; photographs bearing directly upon any of the above matters. Intending exhibitors should communicate before May 25 with the honorary secretary of the exhibition, Miss Winifred de Lisle, 58 Tyrwhitt Road, Brockley, S.E.

WE notice with regret the death, on May 12, in Munich, of Prof. Heinrich von Ranke. Prof. von Ranke was born on May 8, 1830, and was educated in the universities of Erlangen, Berlin, Leipzig, and Tübingen. From the obituary notice in the *Times* we learn that he acted for a year as assistant to the biologist Johannes Müller, and later worked at Tübingen with Hugo Mohl. He took his M.D. degree in 1851. Prof. von Ranke gained much experience in various branches of medical science from his army work under the English Government during the Crimean War, and in later years on the battlefield of Bohemia during the Austro-Prussian War of 1866. In 1874 he was appointed to an extraordinary professorship, dealing with the treatment of children, in the University of Munich. In addition to much work in public hygiene, von Ranke devoted his attention to scientific agriculture, making a model farm of a portion of his estate near Munich. He served as vice-president of the Agricultural Society of Bavaria. His literary work included many pamphlets on his scientific researches and practical experience in medicine; he also wrote on archæological subjects.

AT the invitation of the Mayor and Corporation of Winchester, the annual congress of the South-Eastern Union of Scientific Societies will be held at that town on June 9–12 inclusive, under the presidency of Dr. Dukinfield H. Scott, F.R.S. The following papers will be read:—prehistoric memorials of Hampshire, W. Dale; leaf-mining insects, A. Sich; the evolution of our southern rivers, W. F. Gwinnell; fungus-hunting in Hants, J. F. Rayner; local Lepidoptera, Rev. G. M. A. Hewett; and nature-study for teachers, Prof. Cavers. Messrs. Griffin and Lowne will give a demonstration of plant-pressing and mounting. Dr. Burge, headmaster of Winchester College, has invited members to a conversazione, at which Mr. R. W. Hooley will lecture on the age of reptiles in Hants and the Isle of Wight. The Mayor and Corporation of Southampton have invited the members to visit that city, on which occasion Prof. Hearnshaw will show and explain the corporation documents and regalia. Various visits to noteworthy spots will be conducted by Sir W. Portal, Bart., Mr. W. Whitaker, F.R.S., Mr. N. H. Nisbett, Alderman W. H. Jacob, and Canon Valpy, the Vice-Dean. There will be a loan museum as usual, under the management of Mr. E. W. Swanton. The local secretary is Mr. W. Norris, 4 Upper High Street, Winchester, and the general secretary is the Rev. R. Ashington Bullen, "Englemoor," Woking, from either of whom further information may be obtained.

THE April number of the *Museums Journal* opens with an article, by Dr. A. H. Millar, on the removal of the Scottish Hunterian Museum from the old college in High Street, Glasgow, to Gilmorehill University, in the same city. In the course of the article, which was originally delivered in the form of an address to the Ipswich Museums' Conference, the author gives an account of the career of William Hunter, and a *résumé* of the history and formation of his museum. The transference of the collection to its present home took place in the early 'seventies.

BIOGRAPHY occupies a prominent position in the May issue of *British Birds*, to which Mr. W. H. Mullens contributes an interesting sketch of the lives and works of William Macgillivray and William Yarrell, together with portraits of both these distinguished ornithologists. Macgillivray's "History of British Birds" has, in the author's opinion, met with unmerited neglect, although it is one of the most valuable treatises on its subject in existence. This neglect is attributed to the supposed extreme technicality of the work, to the long interval between its commencement and its completion, and, lastly, although by no means leastly, to the dominating influence of Yarrell's volumes, which appeared about the same time, but in quicker succession.

TO vol. xxi., part ii., of the Proceedings of the Royal Society of Victoria, Prof. Baldwin Spencer contributes an illustrated account of a problematical organism, of which

several examples were thrown up during a storm in Bass Strait. At first sight the general appearance of these jelly-like organisms, for which the name *Hologlaea dubia* has been proposed, suggested affinity with the Ctenophora, but such a relationship is negatived by the fact that what appear on superficial examination to be ctenophoral bands present no trace of the distinctive features of such structures. At one time its describer was of opinion that these organisms might be detached portions of some larger creatures, but he now considers that they probably represent a stage in the life-history, possibly a nursing-stock, of some type at present unknown to naturalists.

IT is argued by Prof. E. L. Greene, with considerable reason, in a paper published in the Proceedings of the Washington Academy of Sciences (vol. xi., No. 1), that Linnæus was not a dogmatic believer in the doctrine of fixed species. This opinion is based on the notes affixed to certain plants in the "Species Plantarum." Thus it is remarked with regard to *Thalictrum lucidum* that the plant is not very distinct from *Thalictrum flavum*, and seems to be the product of its environment. Again, with reference to *Achillea alpina*, it is suggested that the Siberian mountain soil and climate have moulded it out of *Achillea Ptarmica*. A few other similar examples are cited.

AN interesting epitome of the lines of classification adopted by Dr. T. Wolf in his monograph of the genus Potentilla, and communicated by the author, is published in the *Sitzungsberichte und Abhandlungen der naturwissenschaftlichen Gesellschaft Isis* for 1908. The pistil provides the primary characters of distinction for the sections and subsections. The author also discusses the distribution of the genus, which is in accord with the morphological classification, and concludes with the following enunciation. If it is possible to classify a group of plants so that the morphological relationship of the species coincides with a definite geographical distribution, then the classification is certain to be phylogenetic, and therefore natural.

THE rate of growth of palms forms the subject of an article, by Mr. A. W. Lushington, published in the *Indian Forester* (March). The author observed that a fresh leaf-bud was formed every month in the case of all palms, whether betel, date, palmyra, &c., so that the development of twelve leaves a year appeared to be constant. Reckoned on this basis, a palmyra palm would attain a height of about 28 feet in a century, and would not reach maturity for 300 years. Palms develop the full thickness of the stem below ground before they throw up the aërial shoot; the time required for the palmyra appears to vary from about four to twenty years. It is suggested that increase in thickness, being caused by the expansion of the soft central tissue, continues so long as the vascular tissue of the leaf-sheaths can extend, and this varies with the nature of the soil.

THE greater portion of the *Kew Bulletin* (No. 3) is devoted to the flora of Ngamiland as exemplified by the collections of Major and Mrs. E. J. Lugard. Major Lugard furnishes an introductory sketch of the physical and natural features of the country that is peopled by the Batawana, and includes the northern portion of the Kalahari desert. The flora is subtropical; the trees, which are confined to the river banks, consist of several species of Acacia, notably *Acacia giraffae*, *Copaifera mopane*, *Terminalia pruinoides*, and *Kigelia pinnata*. The collections yielded no fewer than ninety-three new species out of a total of 373. The Leguminosæ, the dominant family, provides three new species of Acacia, an Albizzia, and others. Out of eight species of Grewia, five supply new types. *Habenaria Lugardii* and *Crinum rhodanthum* are two new plants with brilliant flowers.

PROF. SCHWENDENER, of Berlin, is well known as a leader in the investigation of the numerous mechanical problems which arise in the study of plants. Botanists will therefore be indebted to Prof. Holtermann for the publication of Schwendener's lectures in an easily accessible form ("Vorlesungen ueber mechanische Probleme der Botanik," Leipzig, Engelmann). The principal topics, treated rather in sketchy outline, consist of the mechanical system of tissues, theory of leaf arrangement, ascent of sap, stomata, and the various mechanisms connected with motile structures. Prof. Holtermann adds critical notes of his own, dealing with some of the points raised in modern controversy. The booklet is well worth reading, though we cannot help wishing that it had been expanded into a larger work. "Lectures," when published in book form, have often been employed as the means of a full discussion by their author of the subjects on which he is specially qualified to speak. So far as the lecturer himself is concerned, the latter sentence would have eminently applied to Schwendener, but these "lectures" stop a long way short of full discussion.

THE habit of using ancient sarcophagi in modern interments is familiar in the case of Charlemagne, who, after his canonisation in 1165, was interred in a sarcophagus which he himself had brought from Ravenna, and Nelson was buried in a stone coffin which legend says was prepared for Henry VIII. by Cardinal Wolsey. The finest existing examples of sarcophagi used in this way in Roman Churches, that of Cardinal Fieschi in the Church of St. Lorenzo fuori le Mura, and that of the Savelli family in Sta. Maria in Ara Coeli, are described by Mr. J. Tavernor-Perry in the April number of the *Reliquary*. That of Cardinal Fieschi, which probably belongs to the second century of our era, is decorated with a Roman marriage in high relief, a frieze representing the story of Phæton, the angles forming two great masks, unfortunately somewhat injured. The more artistic Savelli monument was probably intended for Luca, Senator of Rome, who died in 1266, and was nephew of Pope Honorius III. This sarcophagus is carved with Bacchic figures, holding festoons, from which rise portrait busts, doubtless intended for the original occupants of the tomb. To this the Savelli family added a beautiful superstructure bearing the inscriptions and family arms, the decoration being of the Sienese school, and the lovely glass mosaic the work of the famous Comati family, who were engaged for six successive generations in the churches of southern Italy. Other examples of their work are described, with fine illustrations, in the same number by Miss E. Stacey.

THE May number of the *Geographical Journal* contains an important article, by Prof. Dr. Eugen Oberhummer, of Vienna, on Leonardo da Vinci and the art of the Renaissance in its relations to geography. From the fresh information now available the reputation for scientific knowledge enjoyed by the great painter is still further enhanced. It is not quite certain that the remarkable map of the world now at Windsor, and dating from the beginning of the sixteenth century, is really his work; but much material of a similar kind was discovered by Jean Paul Richter. It is known that in 1502 Leonardo, then in the service of Cesare Borgia as a military engineer, made a tour through Urbino, Pesaro, Rimini, and other places, where he carried out a survey and constructed maps. The

most interesting of these represent Tuscany and the Pontine Marshes, while he made an accurate plan of the town of Imola in the Romagna, of Milan, and other cities. Besides being a topographical he was also an eminent physical geographer and astronomer. He held that the earth was a planet, and denied that it occupied a privileged position in the universe, thus being one of the forerunners of Copernicus. He must also be regarded as the founder of the modern theory of wave motion, and his investigations of the question of currents and of other hydraulic problems are remarkable. He believed that rocks were of sedimentary origin, and that mountains were accumulations of river alluvium. He held, for his time, advanced views on the subject of the Deluge, and as he laid much stress on the influence of erosion he anticipated much of the modern doctrine of valley formation. He did good service for meteorology by his study of winds, and he was one of the pioneers of Alpine exploration. Dr. Oberhummer follows his account of the scientific work of Leonardo by a description of the world and star maps constructed by Albert Dürer. He gives interesting reproductions of the work of these artistic and scientific men from the originals in the collections at Windsor, the British Museum, and other places.

THE prospect of a short water supply during the coming summer is predicted by the Rev. F. C. Clutterbuck, of Abingdon, in *Symons's Meteorological Magazine* for April. Speaking particularly of the Thames Valley, Mr. Clutterbuck bases his prediction on the measurements of a well in the Upper Greensand of which he has a daily record for the last forty years, this well having always been considered a good test as regards water supply. Only on two occasions has the well been so low as it is now, viz. in the autumn of 1898 and in the spring of 1905, which was a year of very short water supply in the Thames Valley. In the six months October–March inclusive, 1904–5, the rainfall at Abingdon was 9·24 inches; in 1908–9 it was 9·13 inches, almost similar conditions. Therefore, Mr. Clutterbuck concludes, we may expect the same deficiency this year as was experienced in 1905. In an editorial article on the rainfall of the winter half-year it is pointed out that for England and Wales there was a deficiency of more than one-quarter of the normal rainfall. The dry autumn may produce an exceptionally good wheat harvest this year, but, the editor observes, the general dryness of the whole winter half-year cannot fail to cause anxiety as to the yield of wells and the replenishment of reservoirs.

UNDER the title of "Bibliographia Botanica," Messrs. W. Junk, of Berlin, have issued a classified catalogue of nearly 7000 books, journals, and pamphlets dealing with all branches of botany.

IN the *Atti dei Lincei*, xviii. (1), 7, Dr. G. Agamennone describes certain remarkable long waves that were recorded by the seismographs at Rocca di Papa on the occasion of the recent earthquakes of December 28, 1908, and also in the Calabrian earthquake of September 8, 1905. The same slow waves were observed at Göttingen in 1905 by Angenheister.

IN the *Annals of Mathematics* (April), x., 3, Prof. E. B. Wilson gives an exposition of the applications of probability to mechanics. The discussion is presented in the form of an introduction to the study of statistical mechanics. It is illustrated by the consideration of simple examples, and well shows how "mean value" and probability for a continuous function depend on the distribution, or, in other words, on the variable with respect to which the function is assumed to be uniformly distributed.

MESSRS. W. CRAMP AND B. HOYLE, in a paper on the electric discharge and the production of nitric acid by means of it, which appears in the April number of the Journal of the Institution of Electrical Engineers, give a *résumé* of the various methods which have been used in the attempt to produce nitric acid direct from the nitrogen of the atmosphere, and criticise them in the light of their own researches. They have investigated the relative efficiencies of various forms of electric discharge, and of different methods of introducing and withdrawing the gases, and have found that a considerable number of the results obtained are in agreement with the ionisation theory. It is unfortunate that the authors were unable to proceed far enough with their researches to enable them to state definitely the yield of acid per kilowatt hour under the best conditions, and on a commercial scale.

IN the April number of the *Journal de Physique* M. A. Dufour gives a detailed account of the examination of the Zeeman effect for certain bands in the emission spectra of gases, on which he has been engaged for the last two years, and of which he has given short accounts in the *Comptes rendus*. He finds that the bands of the emission spectra of the chlorides and fluorides of the alkaline earths examined, and of the second or molecular spectrum of hydrogen, may be divided into three classes, the first of which show the normal Zeeman effect in the direction of the magnetic field, *i.e.* that component of the doublet which has the shorter wave-length is circularly polarised, the direction of rotation agreeing with that of the electric current producing the field. The second class show no appreciable effect, while the third are abnormal, the direction of rotation being reversed, and the polarisation incomplete. M. Dufour is inclined to attribute this abnormal behaviour to negative electrons moving in complicated paths determined by the whole of the atoms constituting the molecule of the gas, while the normal effect is due to the negative electrons moving in comparatively simple paths in the atoms.

FROM Messrs. Adam Hilger, Ltd., we have received an eight-page catalogue giving illustrated descriptions, and prices, of several of the spectroscopes specially designed for the observation of stellar and solar spectra. For amateur observers the Zöllner star spectroscope, supplied for fifty shillings, is a useful and adaptable instrument. Spectroscopes for prominence and other solar observations range from 4*l.* for a small direct-vision, grating instrument, to the 35*l.* to 60*l.* "Evershed" protuberance spectroscope, which is a most efficient instrument for the observation of sun-spot spectra and prominences. For laboratory researches the Littrow type spectrograph is now largely employed, and a specially designed instrument of this type, having an achromatic objective of 2½ inches aperture and 8 feet focal length, and a 2½-inch Rowland or Michelson grating, costs about 65*l.*

WE have received from Messrs. John J. Griffin and Sons, Ltd., a description of "The York Air Tester," an apparatus for the rapid estimation of carbon dioxide in air. The advantages claimed for this apparatus are that it is simple enough to be placed in unskilled hands and sufficiently accurate for controlling ventilation. It is a minimetric method, resembling in principle the apparatus described by Lunge and Zeckendorf about fifteen years ago. In the latter apparatus a measured volume of a weak solution of sodium carbonate, coloured with phenol-

phthalein, was decolorised by a measured volume of the air under examination, the quantity of air being determined by the number of fillings of a rubber pump. In the York apparatus the rubber ball is replaced with advantage by a metallic pump, and the sodium carbonate solution by baryta solution. With the latter solution the absorption is quantitative under the conditions of use prescribed in the instructions. As to the disadvantages of the York apparatus, the quantity of carbon dioxide measured is based on a preliminary calibration with atmospheric air, assumed in the table as 3·6 parts per 10,000. As in towns the amount may be as much as 4·5, the results may be uncertain by 25 per cent. The stock bottle for the weak baryta solution carries sufficient solution for eighty tests, or two litres. This amount seems too large, and makes the whole apparatus unnecessarily heavy. The mode of working is simple, and should give good results in unskilled hands.

THE claims of reinforced concrete as a suitable material for buildings likely to be subjected to earthquakes are advanced in *Concrete and Constructional Engineering* for May. For such buildings either the very lightest form of wood construction should be applied, as in Japan, or, if permanence and architectural effect are desired, some form of monolithic construction as is obtainable in reinforced concrete. Masonry and brickwork are entirely out of place, and steel frames covered with concrete do not seem to have the advantages possessed by reinforced concrete in its simplest forms. In the opinion of the writer, steel-frame construction has been adopted too freely in San Francisco and elsewhere. Reinforced concrete buildings need not necessarily be eyesores; this is altogether a question of good design, and there are sufficient examples of such buildings now in existence to show that the reproach of the older generation of architects cannot be directed at the productions of a really good designer. The article is of interest in view of the now well-known disastrous effects of the recent earthquake in Messina.

A CATALOGUE of new books and new editions added to Mr. H. K. Lewis's medical and scientific circulating library (136 Gower Street, W.C.) during the first quarter of this year provides a concise summary of the chief works of scientific interest issued in recent months.

THE fifth revised edition of Prof. Max Verworn's "Allgemeine Physiologie" has been published by Mr. Gustav Fischer, Jena. The price of this work, which now occupies 742 pages, is sixteen marks.

THE Bulletin of the Pasteur Institute of Southern India (No. 1, 1908) contains details of several researches carried out by Major Cornwall and Dr. Kesava Pai on rabies, *e.g.* diagnosis of the disease, the Negri bodies, histology of the blood, toxins, &c.

THE commemorative address on Darwin and his work, delivered by Prof. August Weismann at Freiburg in Baden on February 12, has been published in pamphlet form by Mr. Gustav Fischer, Jena. A note upon the address appeared in NATURE of March 18 (p. 75).

PROF. W. JAMES'S "Principles of Psychology" has been translated into German by Dr. Marie Dürr, and published by the firm of Quelle and Meyer, Leipzig, with notes by Prof. E. Dürr. The same publishers have just issued a translation into German, by Prof. A. Kalähne, of M. L. Poincaré's work on "Electricity," already translated into English.

THE report of the sixth meeting of the South African Association for the Advancement of Science, held last year at Grahamstown, has now been published. An account of the proceedings of the meeting appeared in NATURE of August 27, 1908 (vol. lxxviii., p. 395), to which reference may be made for the chief subjects discussed in the volume. The amount of work recorded in the 408 pages of the report is a very creditable record for an association founded so recently, and the officers are to be congratulated upon the success of their efforts to arouse and maintain an interest in scientific work in the South African colonies.

THE Smithsonian Institution of Washington has issued a classified list of Smithsonian publications available for distribution in March, 1909. These publications are supplied by the institution either gratuitously or at a nominal cost as an aid to research. Of the many activities of the Smithsonian Institution, this wide distribution of papers, scientific and otherwise, among original workers for the extension of knowledge is one of the most useful. The list has been prepared in such a way as to conform as closely as possible with the classification methods used by the International Catalogue of Scientific Literature, and will be found convenient for reference.

MR. L. F. COGLIATI, 17 Corso di Porta Romana, Milan, has made arrangements to publish the manuscript of Leonardo da Vinci in the library of the Earl of Leicester at Holkham Hall. The volume will contain a double Italian transcription of the text, be printed on hand-made paper, and contain seventy-two heliotype plates, comprising the entire reproduction of the original manuscript and of its numerous illustrations; it will contain an introduction and index, and include a biography of Leonardo da Vinci by Dr. G. Calvi, the editor of the volume. It may be mentioned that the compilation obtained the Tomasoni prize from the R. Istituto Lombardo di Scienze e Lettere. The manuscript contains the material Leonardo gathered for his treatise on hydraulics, and many of his opinions on questions in cosmography and geology are also to be found in it. Only 160 copies of the volume will be published; the first 100 are offered to subscribers at 3*l.* 4*s.* net (postage, &c., 4*s.* additional), and the remaining volumes will be 4*l.* net.

OUR ASTRONOMICAL COLUMN.

MARS.—A telegram from Prof. Lowell, communicated by Circular No. 108 of the Kiel Centralstelle (May 11), announces that two rifts have appeared in the snow-cap of Mars in longitudes 350° and 240°.

JUPITER.—In Bulletin No. 38 of the Lowell Observatory Prof. Lowell describes the different features of Jupiter observed at Flagstaff during the period March 28 to June 4, 1907. The most interesting feature was the system of wisps, or lacings, between the north and south equatorial belts. These festoons were detected by Mr. Scriven Bolton (see NATURE, No. 2000, vol. lxxvii., February 27, 1908, p. 401), and they form a curious network across the equatorial region of the planet. The individual wisps leave caret-shaped markings in the belts, generally at an angle of 45°, and show increased curvature throughout their length. Mr. Lampland has succeeded in obtaining faint photographic images of these peculiar features.

All the dark belts observed were of a cherry-red colour of varying depths, and even the polar hoods at times showed tints of the same hue. The Great Red Spot was but dimly visible, but many dazzling white spots were, from time to time, made out. The equatorial and tropical belts of each hemisphere were seen to be connected by wisps similar to those described above, and the bright